



MATERIAL SAFETY DATA SHEET

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: M-Bond 450 Part A

November 18, 2005

Vishay Micro-Measurements
Post Office Box 27777
Raleigh, NC 27611

MSDS # MGM055G

919-365-3800

CHEMTREC 1-800-424-9300 (U.S.)
703-527-3887 (Outside U.S.)

NOTE: CHEMTREC numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

SECTION 2: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

CAS NUMBER	CHEMICAL IDENTITY	%
7328-97-4	Tetraphenylolothane/ECH Resin	62.8
78-93-3	Methyl Ethyl Ketone	15.8
122-60-1	Phenyl Glycidyl Ether	0.4
123-42-2	Diacetone Alcohol	10.5
110-80-5	Cellosolve Solvent	10.5
106-89-8	Epichlorohydrin	Trace
122-60-1	Phenyl Glycidyl Ether*	<0.45

NOTE: Phenyl Glycidyl is present as an impurity in Tetraphenylolothane/ECH Resin.

SECTION 3: HEALTH HAZARD DATA

Routes of Entry:

Inhalation: YES **Skin:** YES **Ingestion:** ACCIDENTAL

Health Hazards (Acute and Chronic): Effects may include central nervous system depression.

Carcinogenicity: NTP: See Note
IARC Monographs: See Note
OSHA Regulated: N/A

NOTE: Phenyl Glycidyl Ether, an impurity in this product, has been shown to produce nasal cancer in a rat inhalation study at 12 ppm but not at 1 ppm. Epichlorohydrin, an impurity in this product, has been reported to produce cancer in laboratory animals and to produce mutagenic changes in bacteria and cultured human cells. It has been established by the International Agency for Research on Cancer (IARC) as a possible human carcinogen (IARC Group 2A) based on the following conclusions: Human evidence - inadequate; Animal evidence - sufficient. It has been classified as an anticipated human carcinogen by the National Toxicology Program (NTP).

Signs and Symptoms of Exposure:

INHALATION: Product may be moderately toxic and may be harmful if inhaled. Inhalation may result in central nervous system depression. May cause headache, nausea, vomiting, dizziness, drowsiness, irritation of upper respiratory tract, unconsciousness.

EYE CONTACT: May cause irritation and temporary corneal damage. High vapor concentrations may be irritating to the eyes.

SKIN CONTACT: May cause irritation. Prolonged or repeated liquid contact may cause defatting and drying of the skin which may result in skin irritation and dermatitis. Product is slightly toxic if absorbed through the skin.

INGESTION: Not expected to be a relevant route of exposure. May cause headache, nausea, vomiting, dizziness, gastrointestinal irritation, central nervous system depression.

Medical Conditions Generally Aggravated by Exposure: Pre-existing eye, skin, and respiratory disorders may be aggravated by exposure to this product.

SECTION 4: EMERGENCY AND FIRST AID PROCEDURES

INHALATION: Remove victim to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing. Get medical attention.

EYE CONTACT: Flush eyes with plenty of water for 15 minutes while holding eyelids open. Get medical attention.

SKIN CONTACT: Remove contaminated clothing and/or shoes and wipe excess from skin. Flush skin with water. Follow by washing with soap and water. If irritation occurs, get medical attention. Do not reuse clothing until cleaned. Contaminated leather articles, including shoes, cannot be decontaminated and should be destroyed.

INGESTION: CALL A PHYSICIAN. If swallowed, do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration into the lungs.

NOTE TO PHYSICIAN: If more than 2.0 ml per kg has been ingested and vomiting has not occurred, emesis should be induced with supervision. Keep victim's head below hips to prevent aspiration. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before emesis, gastric lavage using a cuffed endotracheal tube should be considered.

SECTION 5: FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used): 22°F (-6°C) Closed Cup

Flammable limits: LEL: 1.7% UEL: 11.4%

Extinguishing Media: Use alcohol foam, dry chemical, or carbon dioxide. Water may be ineffective.

Special Firefighting Procedures: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode. Move containers from fire area if it can be done without risk. Use water to keep fire-exposed containers cool.

Unusual Fire and Explosion Hazards: Vapors may flow along surfaces to distant ignition sources and flash back. Closed containers exposed to heat may explode. Contact with strong oxidizers may cause fire.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Steps to be taken if material is released or spilled: Wear self-contained breathing apparatus and full protective clothing. Shut off ignition sources; no flares, smoking, or flames in area. Stop leak if you can do so without risk. Use water spray to reduce vapors. Take up with sand or other non-combustible absorbent material and place into container for later disposal. Flush area with water.

SECTION 7: EXPOSURE CONTROLS -- PERSONAL PROTECTION

Respiratory Protection: Avoid breathing vapor and mists. If exposure may or does exceed occupational exposure limits, use a NIOSH approved respirator to prevent overexposure. In accordance with 29 CFR 1910.134 use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapors. Avoid breathing vapors which may be produced under some conditions such as heating or applications of uncured material in large surface areas. Avoid breathing aerosols and mists which may be formed by various methods of application.

Ventilation: Use explosion proof ventilation as required to control vapor concentrations.

Protective Gloves: Chemical resistant gloves are recommended.

Eye Protection: Safety goggles are recommended.

Other Protective Clothing or Equipment: Chemical resistant apron is recommended.

Work / Hygienic Practices: Minimize skin contact. Wash thoroughly after using. Eye wash fountains and safety showers should be available for emergency use.

SECTION 8: HANDLING AND STORAGE

Precautions to be taken in handling and storing: Keep container tightly closed. Store in a cool, dry, well ventilated, flammable liquid storage area. Isolate from incompatible materials.

Other Precautions: Bond and ground containers when transferring liquid. Use only with adequate ventilation.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point:	NA
Vapor Pressure (mmHg):	70 @ 68°C
Vapor Density (Air = 1):	2.4
Specific Gravity (H₂O = 1):	1.16
Melting Point:	NA
Evaporation Rate (BuAc = 1):	NA
Volatile Organic Compounds:	37%
Solubility in Water:	Moderate

Appearance and Odor: Deep amber, somewhat viscous liquid with Ketone-like odor.

SECTION 10: STABILITY AND REACTIVITY DATA

Stability: Stable.

Conditions to Avoid: Avoid heat, sparks, and flames.

Incompatibility (Materials to Avoid): Can react vigorously with strong oxidizing agents, strong Lewis or mineral acids, and strong mineral and organic bases; especially primary and secondary aliphatic amines.

Hazardous Decomposition or By-products: Carbon monoxide, carbon dioxide. Aldehydes and acids may be formed during combustion. Reaction with some curing agents may produce considerable heat.

Hazardous Polymerization: Will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

Tetraphenylethane/ECH Resin

OSHA PEL:	Not established
ACGIH TLV:	Not established

Methyl Ethyl Ketone

OSHA PEL:	200 ppm
ACGIH TLV:	200 ppm (TWA)
OTHER:	300 ppm (STEL)

Phenyl Glycidyl Ether

OSHA PEL: 10 ppm
ACGIH TLV: 1 ppm

Diacetone Alcohol

OSHA PEL: 50 ppm
ACGIH TLV: 5 ppm

Cellosolve Solvent

OSHA PEL: 200 ppm (SKIN)
ACGIH TLV: 5 ppm (SKIN)

Epichlorohydrin

OSHA PEL: 5 ppm
ACGIH TLV: 2 ppm

SECTION 12: DISPOSAL CONSIDERATIONS
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Waste Disposal Method: Dispose of in accordance with local, state, and federal environmental regulations.

SECTION 13: TRANSPORTATION INFORMATION

SHIPPING NAME	CLASS	PACKING GROUP	UN NUMBER
Resin Solution Flammable Liquid	3	II	1866

(This applies to shipment of a kit containing M-Bond 450 Part A and Part B.)

SECTION 14: REGULATORY INFORMATION

SECTION 313 SUPPLIER NOTIFICATION:

This product contains a toxic chemical or chemicals (as listed below) subject to the reporting requirements of Section 313 Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372.

CAS NUMBER	CHEMICAL NAME	% BY WEIGHT
110-80-5	Cellosolve Solvent	10.5
78-93-3	Methyl Ethyl Ketone	15.8

TSCA NOTIFICATION:

All components of this product are listed in the Toxic Substance Control Act Chemical Substance Inventory (TSCA).

OTHER:

This product contains a trace of epichlorohydrin which is known to the state of California to cause cancer.

This information should be included in all Material Safety Data Sheets that are copies and distributed for this material.

SECTION 15: OTHER INFORMATION

To the best of our knowledge, the information provided above meets the requirements of the United States Occupational Safety and Health Act and regulations established under 29 CFR 1910.1200 (g)(2)(c)(1)-(4) for a mixture of hazardous chemicals which has not been tested as a whole. The data provided on this Material Safety Data Sheet is from manufacturers of the original components. Vishay Micro-Measurements specifically disclaims any and all form of liability and/or responsibility for the application of this product.